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Aging Workforce:

What Workers' Compensation and Occupational Health Professionals Need to Know

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Let's Talk About:

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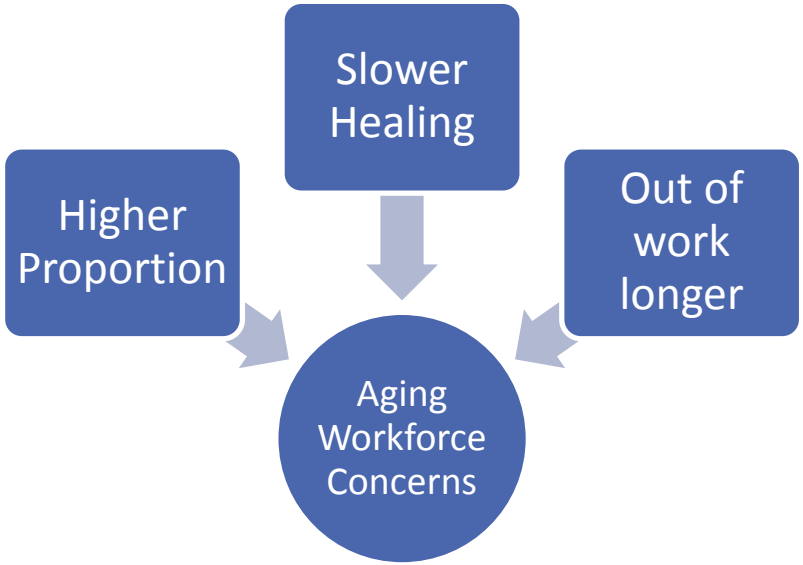
- Physical Changes
- Muscle Strength
- Risks
- Costs
- Solutions



Aging Workforce Trends

Population & Workforce Trends

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- Why are more people working longer? Past “retirement”?
  - Personal financial security: increases in cost of living, shrinking pensions, lack of retirement savings
  - Economy: concerns over stability of Medicare & Social Security

Population & Workforce Trends

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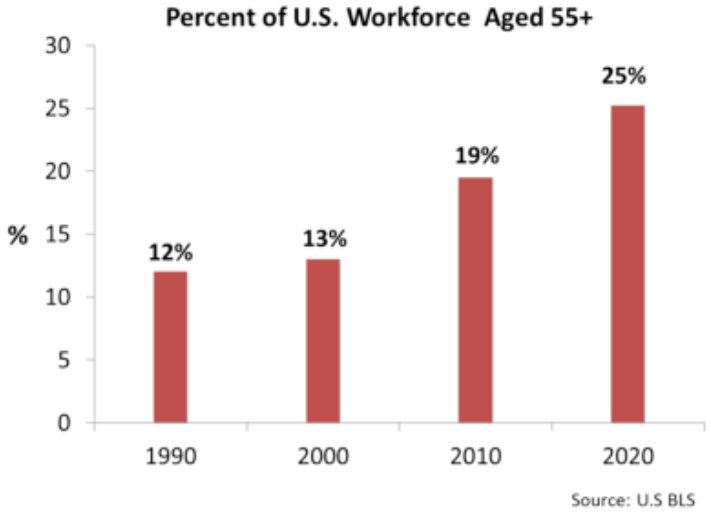
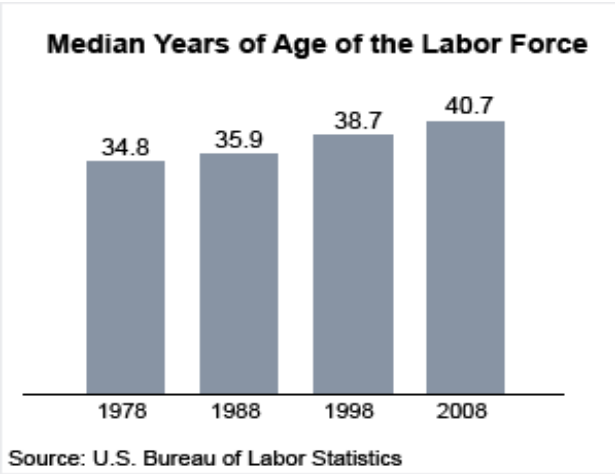
- Well documented that U.S. population trends indicate greater a proportion of workforce over age 55
- Percent population over 65 years highest ever in history, reflecting baby boomers
- Administration on Aging reports the older population (65+) numbered 40 Million in 2009
  - 12% of the U.S. population
  - In 2020, expected to grow to 72M, 25% of our population
- Median age of our labor force is 41 years of age, increasing incrementally
- One fifth of men in workforce are veterans, median age of veterans is 50, non-vets is 39

Ref: U.S. Bureau of Labor Statistics, 2012





Four Key Factors that Increase the Costs of All Insurance

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- Aging workforce
- Loss of muscle mass
  - Sarcopenia
- Loss of muscle strength
  - Dynapenia
- Obesity

If you can positively affect these factors, you can control medical, disability and injury costs!

Impact of Muscle Mass, Strength and Fat Weight on Body Weight

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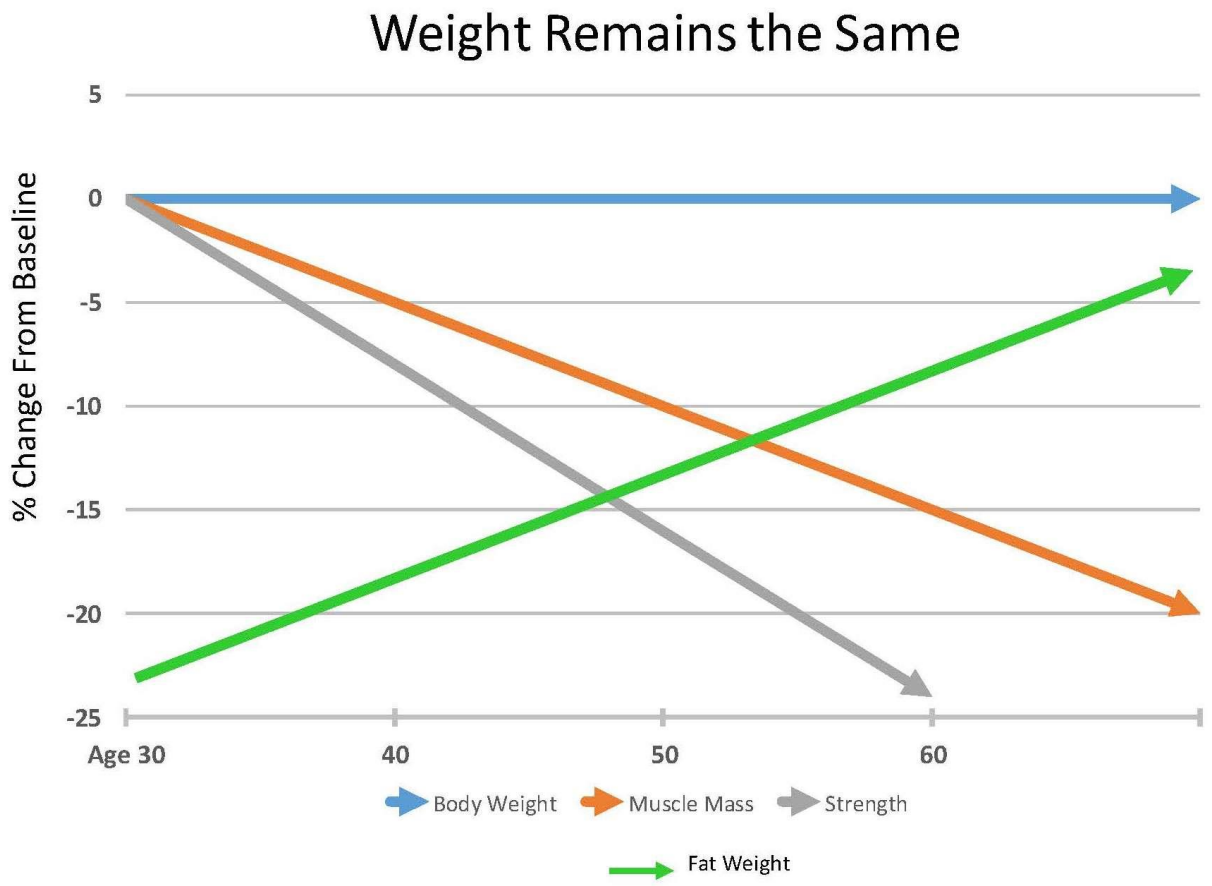

Ref: Tom Gilliam PhD: IPCS

The Aging Workforce

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- Older workers have lower incidence rate of injury
  - Recover more slowly from injuries and illnesses resulting in delays in returning to work
  - More costly claims
- Longer rehab durations
- Benefit of aging workers:
  - Pride, work ethic
  - Knowledgeable

Aging Workforce Recovery Trends

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- Research indicates recovery times following injury are longer with this age group:
- Median number lost work days after injury increases with age:

Ref: U.S. and state government researchers (CDC, BLS and several state agencies) 2009-2013
Ref: National Institute for Occupational Safety and Health, Morbidity & Mortality Weekly Report

Aging Workforce How They Get Injured

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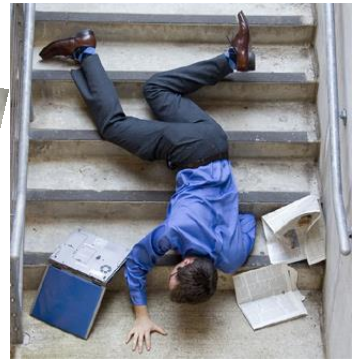
- Research indicates the most common injury type for this workforce group is……

FALLS!

- Balance deficits, muscle weakness, vision loss, side effects from medicine



Aging Workforce: What Gets Injured

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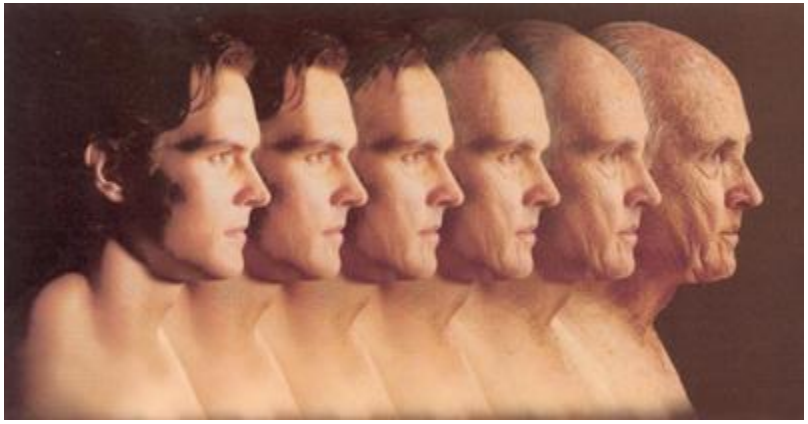
- Research trends indicate the most frequent injuries by body part and condition are:
- Most frequently injured body parts:
  - Ankles, Wrists, Arms, Hips
- Injury Types:
  - Fractures, strain, sprain, soft tissue injuries
  - Women more likely than men to sustain fractures of wrists, forearms in older population
  - Higher incidence of multiple injuries, co-morbidities

Ref: U.S. and state government researchers (CDC, BLS and several state agencies) 2009



Age-Related Changes & Impact on Work

Age Related Changes in Human Body

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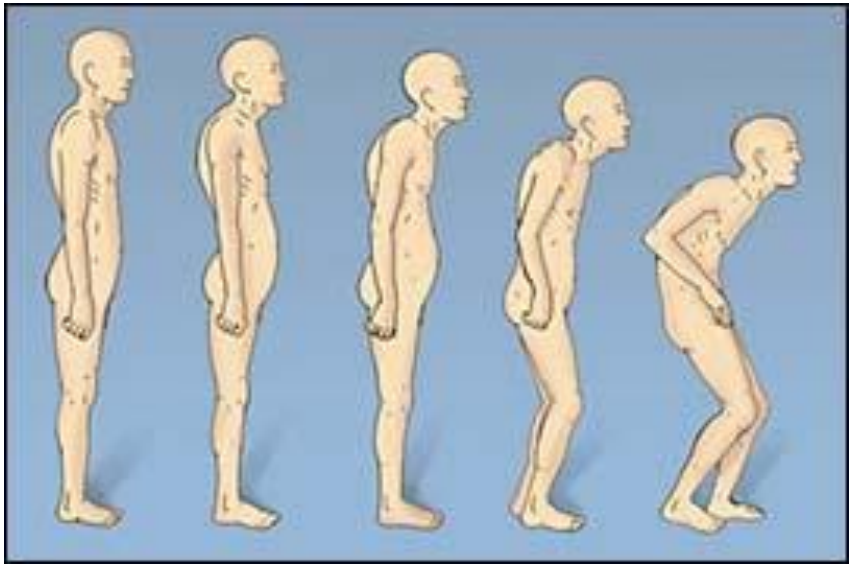
With regards to working & deficits a Physical Therapist can assist with, primary areas of concerns are:

- Bones & Joints
- Eyes
- Vascular Changes
- Dehydration
- Functional Abilities



Ref: National Institute of Health
MedlinePlus: Winter 2007 Issue: Volume 2 Number 1 Pages 10 - 13

The Aging Bones & Joints

Weight bearing and movable joints at highest risk for age-related degenerative changes

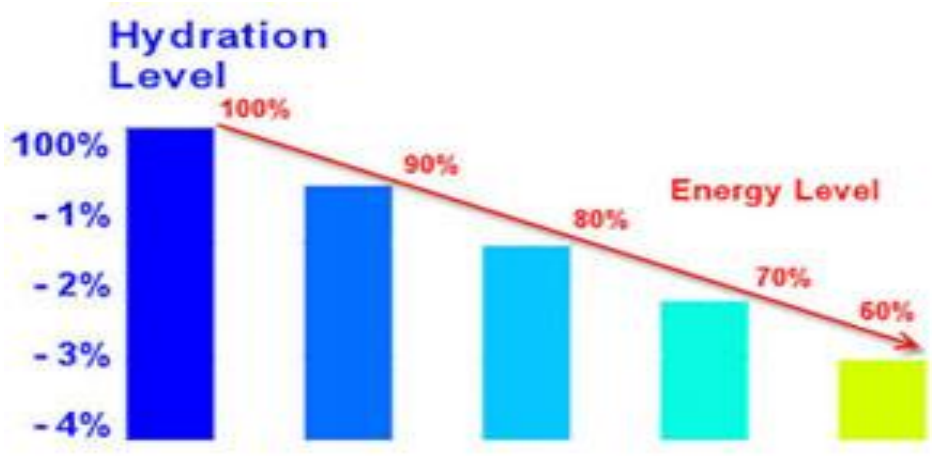
- Osteoporosis
  - Risk factor increases over age 40
  - Higher fracture risk: Spine, Hip, Wrists
- Arthritis
  - Loss of ROM, flexibility, strength

Age Related Vascular System Changes

- Arteries stiffen, higher blood pressure
- Diminished ability to regulate heart rate; diminished peripheral blood flow
  - Oxygen exchange – 40% lower at 65 yrs
  - Respiratory system – 25 % less at 65 yrs, 50% less at 70 yrs
  - Cardiovascular system – 15-20 % less at 65 yrs

Age Related Dehydration

- **Percent body water composition:**
  - Newborn: 90%
  - Young adult: 70%
  - Elderly person: 50-60%
- Leads to light-headedness, dizziness, muscle weakness, loss of attention, fatigue
- Use of PPE or extreme heat can worsen



Age Related Vision Changes

- Poor/awkward postures to accommodate, increased muscle strain, injuries, degenerative joint/discs diseases
- Increased eye strain/dryness/headaches
- Reduced ability to see safety warnings
- Higher injury risk due to limited vision

Sarcopenia (Higher Fall Risk)

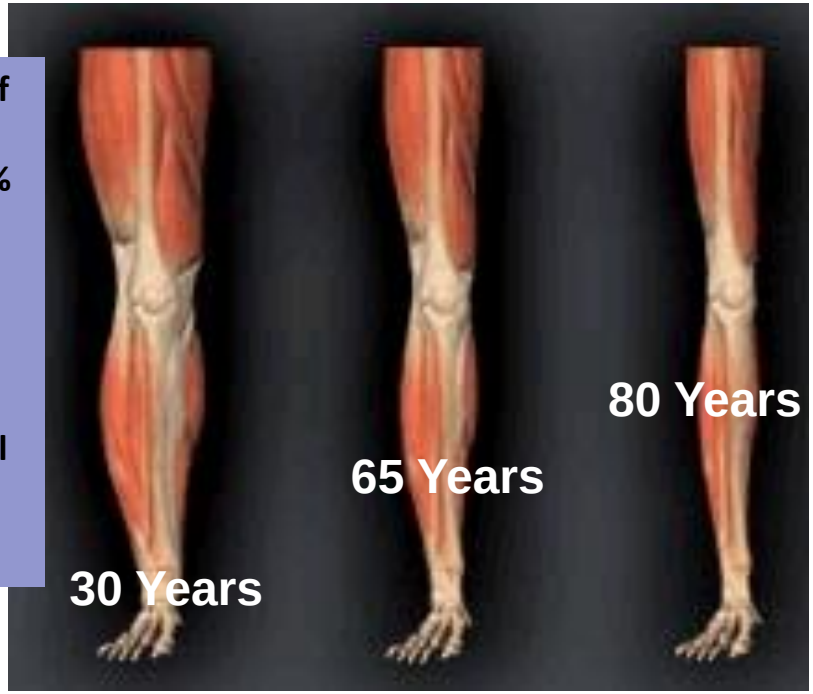
Sarcopenia:

- From Greek language, meaning "poverty of flesh"
- Defined as age related loss in muscle size and strength
- Decrease in lean muscle mass often accompanied my increase in fat, body weight may remain unchanged
- Direct correlation to muscle loss (sarcopenia), loss of strength and an increase for fall risk
- Dr. Turpelek, Cleveland clinic: strength: 4th vital sign

•Loss of strength due to loss of 30% of muscle mass from age 30 to 65, by age 80, loss of 50% of muscle mass

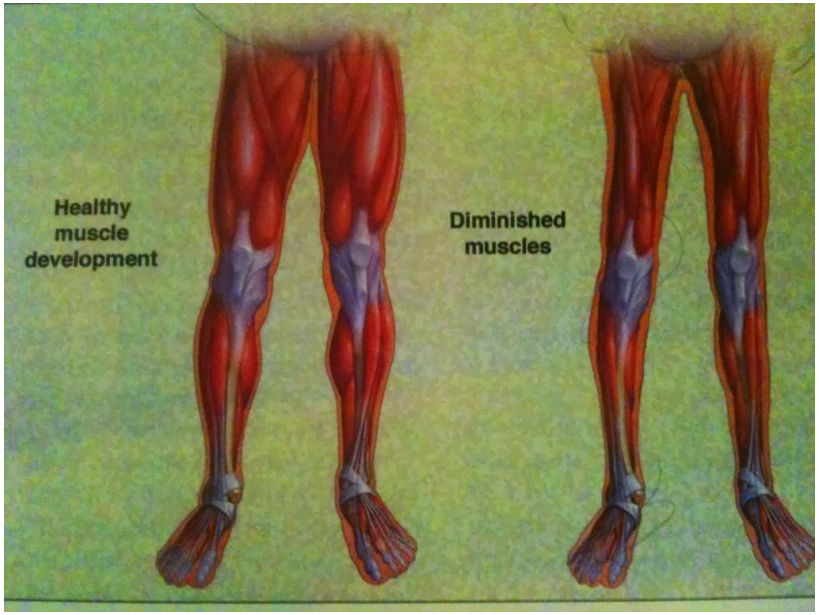
•Contributes to loss of functionality

•Can be reversed with physical activity/strength training



Ref: Industrial Medicine and Acute Musculoskeletal Rehabilitation: Acute Musculoskeletal Injuries in Aging Workforce, 2007

Low Strength Associated with Disease



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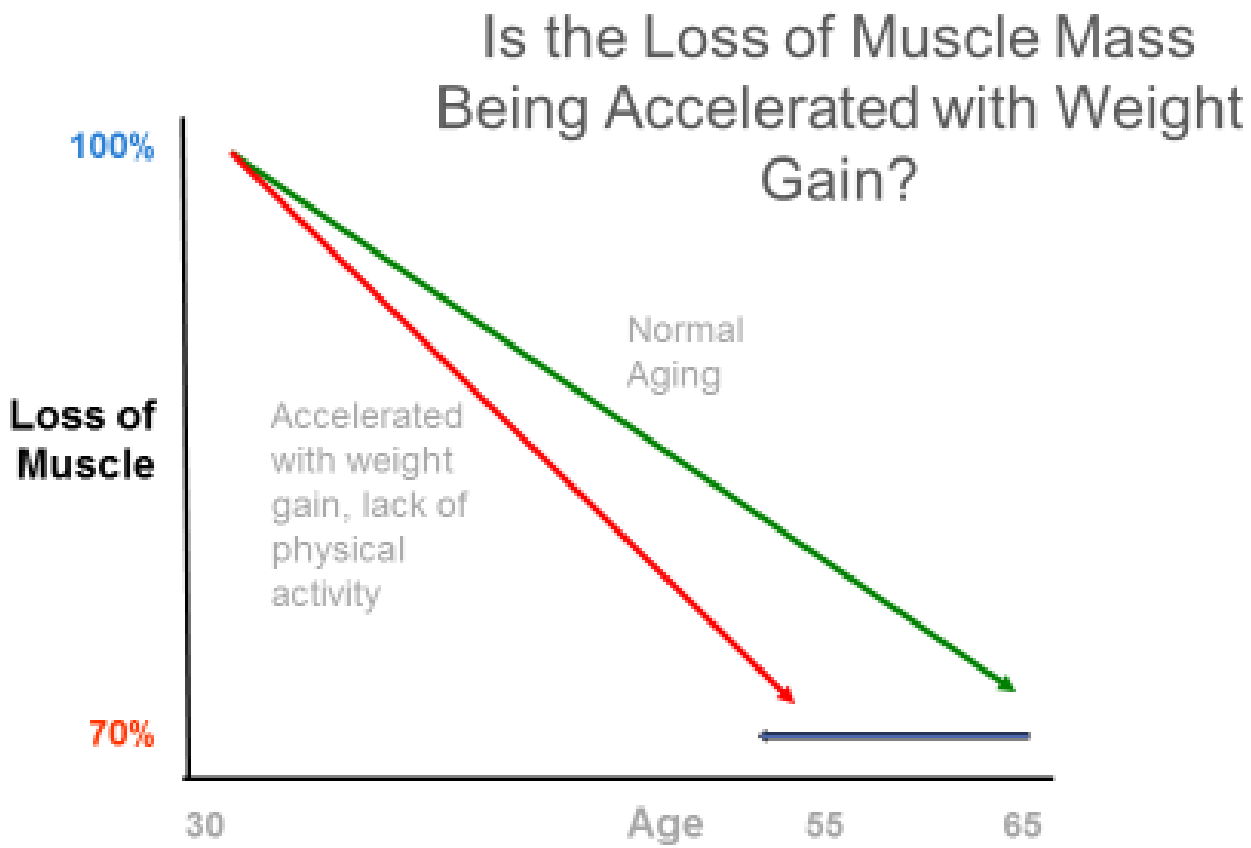
Increased Risk For:

- Metabolic Syndrome
- Type II Diabetes
- Cardiovascular Disease
- Mortality

Body Weight Accelerated Strength Loss



Ref- Why Decreased Muscle Mass is a Risk Factor: *A Costly Risk Factor That Can Be Reversed (White paper)* Tom Gilliam PhD: IPCS and Move It or Lose It, 2013, with permission

Age Related Functional Changes

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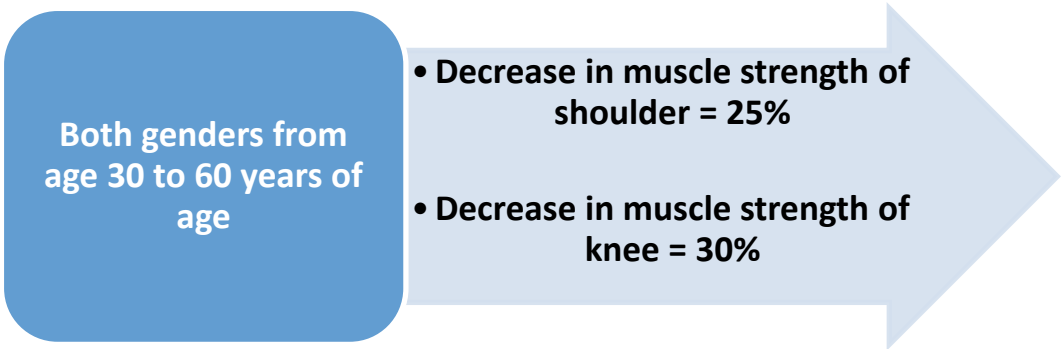
- Diminished muscle strength, flexibility coordination, reflexes, balance, loss of range of motion, general de-conditioning
  - Strength - 25-30 % lower at 60 yrs
  - Flexibility - 18-20 % decrease at 65 yrs
  - Reaction time & speed – decreases
  - Manual dexterity & tactile feedback – motor skills deteriorate
- Co-morbidities with pathophysiological affects: diabetes, heart disease, circulatory problems, nervous system etc.
- Medications: dizziness etc.



- Impact on Work:
- Safety & injury risk: falls!
- Less physically demanding jobs

Body Weight Strength Relationship

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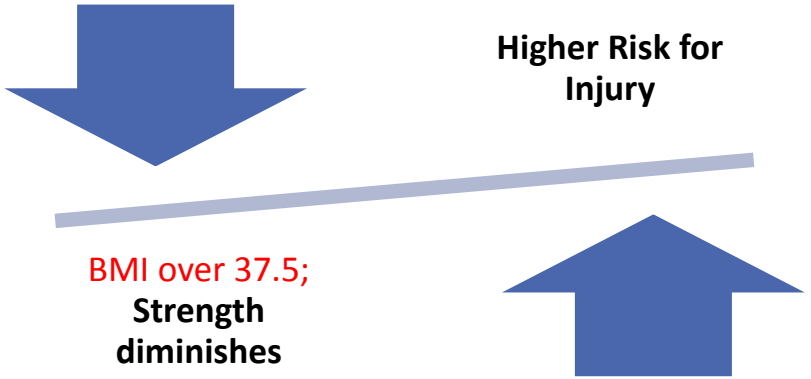
- Suggested: a worker's strength must be proportionate to the worker's body weight to allow the worker to safely perform the essential functions of the job
- As body weight increases so does strength up to a BMI of about 37.5 (severe obesity category of 35 to 39.9)
- For BMI's greater than 50: negative relationship between strength and weight



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Aging: Impact on Work

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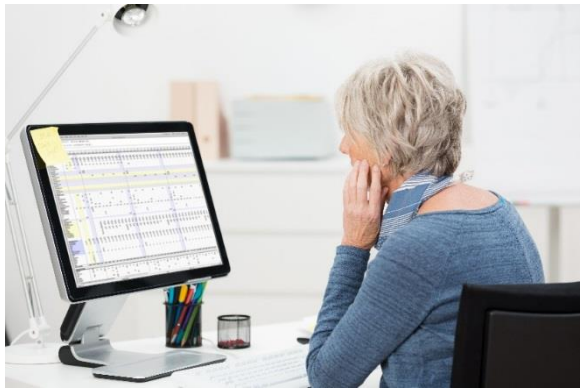
- Higher fall risk
- Painful, slower movement
- Lower productivity
- Poor Postures
- Higher risk for CTDs,
- Slower tissue recovery rates
- De-conditioned, poor activity tolerance, fatigue



Age Drives Utilization

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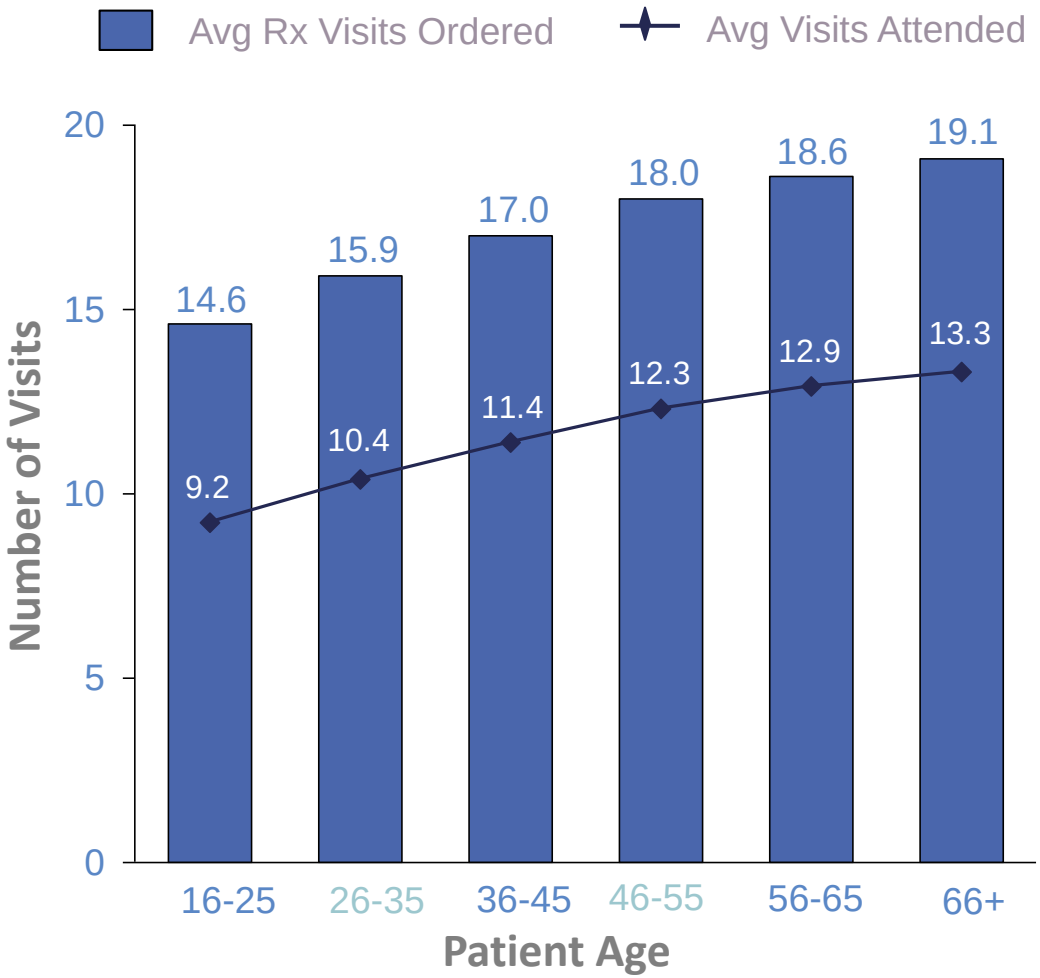

Ref: Align Networks Data, Prospective Referrals with Applicable Guidelines ("Unknown" & "Other" injuries excluded), Client mix, 2013 Data

Injury Treatment for Aging Worker

Treatment of Aging Workers is Unique

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- Understand effects vision, hearing, and cognitive loss:
  - More auditory, visual prompts, cues
- Exercise prescription
  - Address bone, joint degenerative changes, loss of muscle strength, balance, slower tissue recovery times, metabolic and cardiovascular changes
- Many older individuals may be exercise intolerant due to co-morbidities, side effects from meds
- Sarcopenia can largely be prevented with a structured strengthening exercise program
  - Research indicates P.T. exercise programs with eccentric training and high velocity concentric training more effective than traditional exercise regimens (provided next section)

Exercise Rx: Strength Exercises

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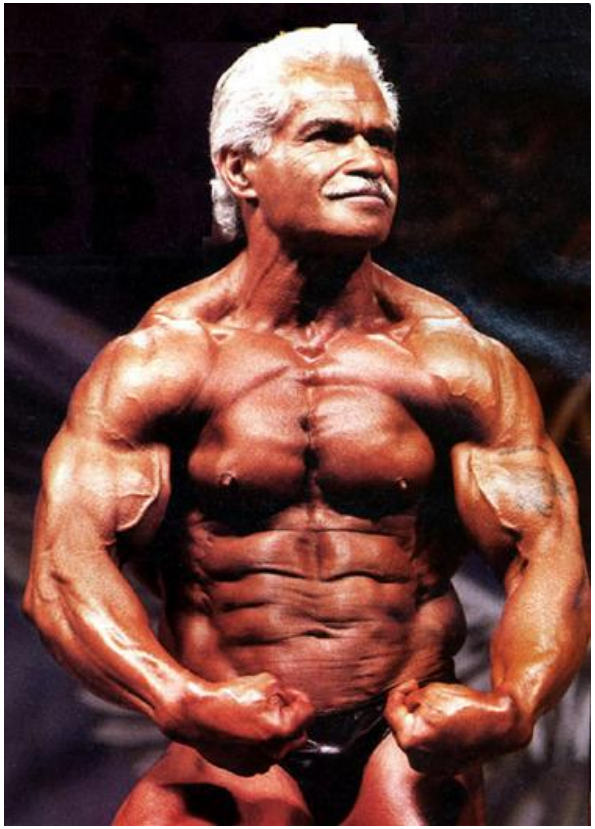
- Sarcopenia (age-related muscle loss) and Dynapenia (age-related loss of muscle strength) can largely be prevented
  - With structured strengthening exercise program
- Eccentric training & high velocity concentric training is more effective than traditional exercise regimens
- Strength training:
  - Improves balance
  - Reduces fall risk
  - Builds bone mass and reduces osteoporosis
- Reduction in falls = reduction work-related injuries, fractures



Eccentric vs. Concentric

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Dynamic Exercise

Concentric:

shortening of muscle

resist load

produce work

Eccentric:

lengthening of muscle

control load

absorb energy

Exercise Rx:
Rapid Concentrics

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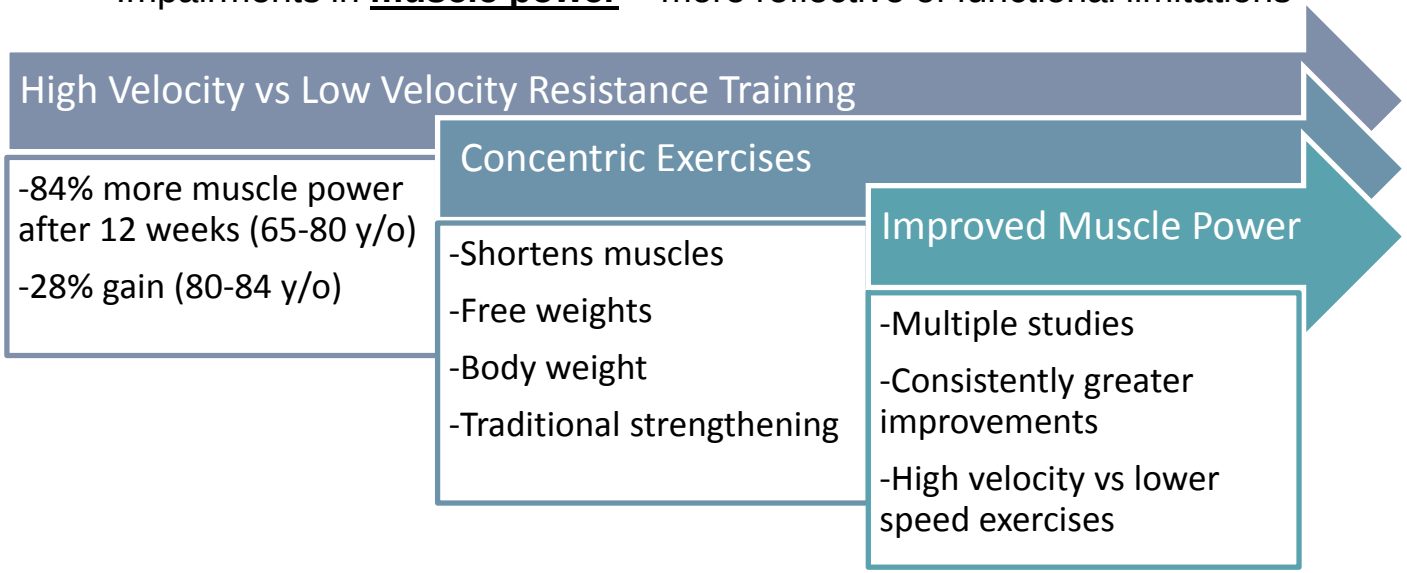
- Peak muscle power (production of force AND velocity) declines with age (65+)
  - Earlier and faster than muscle strength
- Decreased muscle power production attributed to documented changes in muscle fiber quality and quantity (sarcopenia)

Preservation of **muscle strength** = dependence on the maintenance of muscle mass
Impairments in **muscle power** = more reflective of functional limitations



Ref: Skeletal Muscle Power: A Critical Determinant of Physical Functioning in Older Adults, College of Sports Med. 2011

Exercise RX: Eccentrics

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- Referred to as “Negative work”
  - Because muscle is absorbing the energy in a loaded position, slows contraction to control it
  - Measurable force production = highest
- Strength production = highest
- Muscle size = greatest gains
- Body Builders use 1: 4 count to load muscle and grow size fast
- Benefits to Aging Population:
  - Offer greater benefit to countering age related sarcopenia and dynapenia due to greater overloads through lower impact exercises
  - Require less energy, more easily tolerated by older population

Ref: The Power of Eccentrics for the Aging, APTA, 2013

Prevention of Injuries for Aging Workers

Injury Prevention

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- PTs can be a resource in injury prevention for all workforce groups
- Injury prevention is a lifestyle choice
- Educate & encourage overall healthy lifestyle, general wellness:
  - Regular check-ups: dental, eye exam, physician exam
  - Proper diet & hydration
  - Regular exercise program
- Community safety: reduce risk for falls
  - Choose well lit walk-ways, slip resistant floor surfaces, remove trip hazards

Clinical Implications: Ergonomics

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Industrial Setting/related to material handling:

- Forceful Exertion
- High Repetition
- Awkward Postures/ working outside of “optimal” or neutral joint postures
- Sustained postures
- Contact Stress
- **PPE/Gloves: *Increase grip needed by10%***
- Shift work/schedules/OT
- Continuous work/work cycles
- Extreme Temperature
- Vibration/Whole Body & Segmental Vibration

Office setting:

- High Repetition
- Awkward Postures/ working outside of “optimal” or neutral joint postures
- Sustained postures
- Contact Stress

Clinical Implications Ergonomics

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Grip Strength Diminishes with Age:

- 40% loss through age ranges
- Use of gloves increases strength required to perform same task without gloves (10%)

Age Range	Male (avg. Lbs)	Female (avg. Lbs.)
30-40	120	76
41-50	110	64
51-60	106	58
61-70	90	52
70+	70	45

Ref: Grip and Pinch Strength, Normative Data for Adults: V. Mathiowetz MS, OTR, et al. Arch Phys Med & Rehab 66: 69-72, 1985

Ex: Bifocals Ergo Accommodation:
Lower Computer monitor for bifocal user to reduce neck muscle/ligament strain

- Teach ergonomic solutions for the workplace (IW takes ownership):
- Ergonomic Analysis/Accommodations: adjust work area to changes in body: modify grip/handles, adjust for vision changes, shelf height
- Posture, body mechanics, joint protection, work cycles
- Address M.O.I.: overexertion, postures to avoid end range, adequate work cycles, longer recovery times etc.

Solutions: Injury Prevention Programs

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- Reduce risk for falls
- On-site Wellness
- Pre-work screening program / Fit for Duty Programs: match demands of body to work
- Considers physical abilities/limitation, work demands, work goals
- Proven success for proper hiring practices, reduced medical and workers' compensation claims/costs

Driving Successful Outcomes

Solutions: Improving Outcomes

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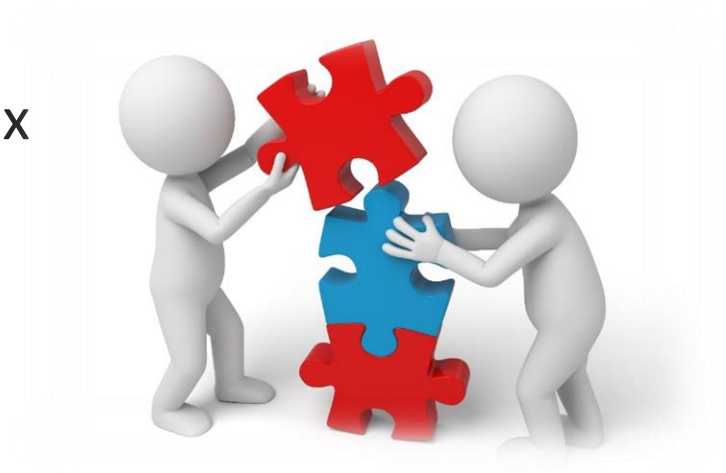
How industry stakeholders can facilitate best outcomes:

- Steer injured workers to best providers
  - Compliance
  - RTW outcomes
- Early identification and severity classification
- Analyzing outcomes data:
  - Understand nuances in state mix
  - Surgical vs. non surgical
  - Benchmarks



Solutions

ADJUSTER/CM

How can claims staff help improve outcomes?

- Goals
- Job descriptions
- Focused plans

PHYSICAL THERAPIST

How can medical providers drive RTW/SAW?

- Communicate
- Document
- Eyes and ears

Expectations

Communication

Improved Outcomes

Prevention

Empower

EMPLOYER/RISK MGR

How can employers support the prevention of injuries and follow through post injury?

- Post offer testing
- Job descriptions
- Injury patterns
- Ergonomics
- Wellness

INJURED WORKER

How do we improve injured worker buy in and participation?

- Treatment involvement
- Buy in
- Confidence

Collaborate: Focus on safety, preventing re-injury with ***Stay at Work***, ***Return to Work*** focus

Thank you!

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